What is claimed is:

1. A packet switching system comprising:

a table for mapping either an input label value or
5 a set of input label value and input port to an output port
and an output label,

wherein a state variable is set for either the input
label value or the set of input label value and input port
mapped in the table to represent either of the three states
10 of 'not reserved', 'reserved', and 'double reserved'; and

a packet switch for packet-switching packet data
according to the information mapped in the table.

2. In a network constituted by a plurality of packet
15 switching systems connected through transmission lines,
a route modification method for modifying a label switching
path from an old route to a new route, comprising the steps
of:

including in a label request for a new route an
20 identifier indicating an old route having a sharable label;

forwarding the label request from a packet switching
system located on upstream side to a packet switching system
located on downstream side along the new route;

in the packet switching system located on the
25 downstream side, setting the label for the old route to
a double reserved state in case the new route being requested
in the label request overlaps with the old route, or

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reserving a new label in case the new route does not overlap
with the old route;

notifying the packet switching system located upstream
from the packet switching system located downstream about
5   the each reserved label;

forwarding a label release request explicitly
specifying the old route to the packet switching system
located on downstream side along the old route; and

in the packet switching system, when receiving the
10 label release request, either setting the double reserved
label to a reserved state being reserved only for the new
route in case the new route overlaps with the old route,
or releasing the label for old route in case the new route
does not overlap with the old route.

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3. In a network constituted by a plurality of packet
switching systems connected through transmission lines,
a route modification method for modifying a label switching
path from an old route to a new route, comprising the steps
20 of:

including in a label request for a new route an
identifier indicating an old route having a sharable label;

forwarding the label request from packet switching
system located on upstream side to packet switching system
25 located on downstream side along the new route;

in the packet switching system located on downstream
side, setting the label for the old route to a double reserved

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state in case the new route being requested in the label request overlaps with the old route, or reserving a new label in case the new route does not overlap with the old route;

5   notifying packet switching system located upstream from packet switching system located downstream about the each reserved label;

in the packet switching system located on upstream side, when receiving the reserved label, setting for an
10   old label a release priority higher than a release priority for a new label;

forwarding a label release request to packet switching system located on downstream side along the old route; and

in packet switching system, when receiving the label
15   release request, either setting the double reserved label to a reserved state being reserved only for the new route in case the new route overlaps with the old route, or releasing the label for old route having the higher release priority in case the new route does not overlap with the
20   old route.

4. An optical cross-connect system comprising:

a table for mapping a set of input wavelength and input port to an output port and an output wavelength,
25   wherein a state variable is set for either the input wavelength or the combination of input wavelength and input port mapped in the table to represent either of the three

states of 'not reserved', 'reserved', and 'double reserved'; and

cross-connect equipment for converting wavelengths according to the information mapped in the table.

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5. In a network constituted by a plurality of optical cross-connect systems connected through transmission lines, a route modification method for modifying a wavelength path from an old route to a new route comprising

10 the steps of:

including in a wavelength request for a new route, an identifier indicating an old route having a sharable wavelength;

forwarding the wavelength request from an optical

15 cross-connect system located on upstream side to an optical cross-connect system located on downstream side along the new route;

in the optical cross-connect system located on downstream side, setting the wavelength for the old route

20 to a double reserved state in case the new route being requested in the wavelength request overlaps with the old route, or reserving a new wavelength in case the new route does not overlap with the old route;

notifying the optical cross-connect system located

25 upstream from the optical cross-connect system located downstream about the each reserved wavelength;

forwarding a wavelength release request explicitly

specifying the old route to the optical cross-connect system located on downstream side along the old route; and

in the optical cross-connect system, when receiving the wavelength release request, either setting the double

5 reserved wavelength to a reserved state being reserved only for the new route in case the new route overlaps with the old route, or releasing the wavelength for old route in case the new route does not overlap with the old route.

10 6. In a network constituted by a plurality of optical cross-connect systems connected through transmission lines, a route modification method for modifying a wavelength path from an old route to a new route comprising the steps of:

15 including in a wavelength request for a new route an identifier indicating an old route having a sharable wavelength;

forwarding the wavelength request from an optical cross-connect system located on upstream side to an optical

20 cross-connect system located on downstream side along the new route;

in the optical cross-connect located on downstream side, setting the wavelength for the old route to a double reserved state in case the new route being requested in

25 the wavelength request overlaps with the old route, or reserving a new wavelength in case the new route does not overlap with the old route;

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notifying the optical cross-connect system located upstream from the optical cross-connect system located downstream about the each reserved wavelength;

in the optical cross-connect located on upstream side, when receiving the reserved wavelength, setting for an old wavelength a release priority higher than a release priority for a new wavelength;

forwarding a wavelength release request to the optical cross-connect system located on downstream side along the old route; and

in the optical cross-connect system, when receiving the wavelength release request, either setting the double reserved wavelength to a reserved state being reserved only for the new route in case the new route overlaps with the old route, or releasing the wavelength for old route having the higher release priority in case the new route does not overlap with the old route.